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(56) Documents cited

None

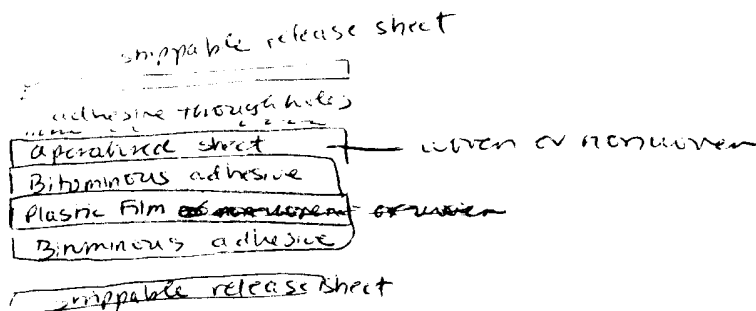
(58) Field of search

B5N

B2E

(54) Improvements in adhesive sheets

(57) A laminated sheeting for roofing, especially for flat roofs, to replace labour-intensive and costly built-up roof structures is composed of a central core of plastics film having a layer of self-adhesive bituminous waterproofing compound on each side, with one of the exposed surfaces of the compound carrying a sheet with apertures covering 10 to 50% of its area. The laminate can bond to a roof structure by adhesion of the bituminous compound in the area of the apertures, and the unbonded region permits water vapour to escape.



GB 2 138 357 A

SPECIFICATION

Improvements in adhesive sheets

- 5 This invention concerns improvements in adhesive sheets, more especially it concerns improvements in adhesive roofing sheets.

Conventionally, the most common method of providing a waterproof flat roof for buildings is by building up layers of waterproofing membranes and reinforcements. The waterproofing membrane is generally bitumen, applied manually by spreading molten bitumen over a base layer or base structure. It is difficult to ensure an even and complete layer of bitumen and bonding between the layer and the base layer or structure and jointing between adjacent areas of the layer; certainly some problems are caused by cooling and hardening of the bitumen during application. Not only is the application of bitumen layers very labour intensive but also the inherent unreliability of the waterproofing necessitates the application of many layers in the typical "built-up" roof. Preformed sheeting comprises a support sheet of plastics, a metal foil, roofing felt or the like, with a bonded waterproofing layer of self-adhesive bituminous compound, have been marketed, although the major usage has been in waterproofing foundations and below-ground structures, some have been proposed for and used as a top layer or other layers in a built-up roof.

Since the energy crisis of the 1970's, much greater attention has been paid to insulating buildings. Despite the advantages in energy savings, problems do arise because the temperature difference between the "outside" and "inside" of the insulating layer can cause condensation of water vapour permeating the insulating layer. Inadequate ventilation, perhaps aggravated by substantially totally impermeable waterproof built-up roofs, can lead to rot, decay and degradation of the building structure, and/or bubbling and cracking of the bitumen layers.

The present invention aims to provide a laminated waterproofing structure for roofs which substantially simplifies the construction of reliable waterproof roofs. The invention provides a laminated sheeting comprising a core layer of synthetic plastics film, having on each face thereof a pressure-sensitive adhesive and waterproofing layer of a bituminous compound, one of said adhesive and waterproofing layers having adhered thereto on the surface remote from the core layer, a continuous or discontinuous apertured sheet in which the apertures form 10 to 50% of the overall area of the sheet, said apertured sheet being substantially impervious to the bituminous compound except where there is an aperture, whereby the bituminous compound of said one layer is capable of bonding to a substrate in the area of said apertures. Preferably, the exposed surfaces of the adhesive and waterproofing layers carries a strippable release sheet to protect the laminate storage and handling.

The central core layer is suitably a polyolefin, including polyethylene, polypropylene and copolymers, or a polyvinyl chloride or polyester film. The core layer must be 0.020 to 0.250 mm thick.

The pressure-sensitive adhesive and waterproofing layer is suitably a tacky compounded bitumen. The bitumen may be a straight or, preferably, blown, bitumen, compounded with a polymer and optionally with other components including tackifiers, extenders, fillers, pigments and oils to give a material which is waterproof and will adhere strongly to materials such as concrete when moderate pressure, such as can be applied manually, is applied. Preferably, the polymer in the compound is a rubber, and maybe a natural or synthetic rubber. Each layer is suitably 0.5 to 5 mm thick.

The apertured sheet is preferably a sheet of plastics film such as polyolefin, PVC or polyester, paper such as kraft paper or building paper, metal such as aluminium or copper foil or sheet, or a woven or non-woven fabric of natural or, preferably, synthetic fibre, preferably a polymer or glass fibre non-woven fabric. The apertures are suitably regularly spaced and extend across the full area of the sheet; in a continuous apertured sheet they are conveniently round, rectangular or rhombic in shape and may be between 30 and 200 mm across. It is to be understood that a discontinuous apertured sheet may comprise discrete strips of the sheet extending over the area of the laminated sheeting. Conveniently the strips are applied parallel to the length of the sheeting, and are suitably 25 to 250mm wide, regularly spaced and leaving apertures or exposed bituminous compound in widths of suitably 30 to 200mm. It will also be understood that the layer of bituminous compound adhering to the apertured sheet can flow through the apertures under the application of moderate pressure and thus bond the laminated sheeting to a substrate. Accordingly, the apertured sheet should not be excessively thick and may conveniently be 0.020 to 3mm thick, preferably 0.05 to 0.5mm thick.

Preferably, both external faces of the laminated sheeting carry a release sheet; such sheets are well known and may conveniently be a silicone-treated paper or plastics film which is easily stripped from the adhesive and waterproofing compound immediately before use.

The laminated sheeting of the invention is preferably made up in rolls; for most uses where the rolls have to be handled and applied manually, suitable widths are 0.8 to 1.2mm. The sheeting is applied to a roof deck or insulation layer so that the apertured sheet is in contact with the deck or insulation layer and bonded thereto by bituminous compound. The bituminous compound extends through the apertures but is sufficiently viscous so that it does not flow into the regions in which there are no apertures. The apertured sheet permits the laminated sheeting to be bonded firmly to the roof structure but provides interconnecting areas in which there is no bonding, thus allowing water vapour to pass to the edge of the applied sheeting where it exits.

The top surface of the laminated sheeting is also adhesive after the release sheet is removed, and to this surface can be bonded a variety of materials including other conventional roofing materials such as felts, sheets, solar-reflective sheets or coatings and the like. The laminated sheeting is easily applied

does not
seal
SBS

to a roof deck, insulation surface etc and adjacent strips of the sheeting can be overlapped without losing the characteristic of venting water vapour. To assist in laying and lapping adjoining strips, an edge of the upper release sheet may be separable or

5 separate from the main part, to provide an adhesive selvage.

According to the invention, the laminated sheeting is able to provide a combination structure having

10 means to allow water vapour to be vented, an extremely reliable composite waterproofing layer of two layers of bituminous compound and the intermediate core of plastics film and a top layer of permanently tacky adhesive. If desired, other layers,

15 for example of reinforcing fabric may be included. Substantial savings in labour costs may be achieved and the reliability of manufacturing the sheeting off-site in a factory promises a reduction in costly failures in waterproofing.

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CLAIMS

1. A laminated sheeting comprising a core layer of synthetic plastics film, having on each face thereof
- 25 a pressure-sensitive adhesive and waterproofing layer of bituminous compound, one of said adhesive and waterproofing layers having adhered thereto on the surface remote from the core layer, a continuous or discontinuous apertured sheet in which the
- 30 apertures form 10 to 50% of the overall area of the sheet, said apertured sheet being substantially impervious to the bituminous compound except where there is an aperture, whereby the bituminous compound of said layer is capable of bonding to a
- 35 substrate in the area of said apertures.
2. A sheeting according to claim 1, wherein the exposed surfaces of the adhesive and waterproofing layers carry a strippable release sheet.
3. A sheeting according to claim 1 or 2, wherein
- 40 the apertured sheet is selected from sheets of plastic film, paper, metal and woven or non-woven fabrics.
4. A sheeting according to any one of the preceding claims, wherein the apertured sheet is of 0.020 to 3 mm thickness.
- 45 5. A sheeting according to any one of the preceding claims, wherein the apertured sheet has apertures between 30 and 200 mm across.
6. A sheeting according to any one of the preceding claims, in which the adhesive and waterproofing layers have a thickness in the range 0.5 to 5 mm.
- 50 7. A sheeting according to any one of the preceding claims, in which the core layer is a film of polyolefin, polyvinyl chloride or polyester.
8. A sheeting according to any one of the preceding claims, in which the core layer is 0.020 to 0.250 mm thick.
- 55 9. A sheeting according to claim 1, substantially as hereinbefore described.

10. A roofing structure comprising a sheeting according to any one of the preceding claims adhered to a substrate by means of the bituminous compound in the area of the apertures of the apertured sheet.
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